QUALITY SYSTEM EMPLOYEE FAMILIARIZATION

Course ISO-QA-002, Revision D
January 1, 1998

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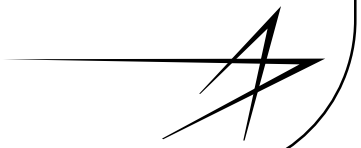
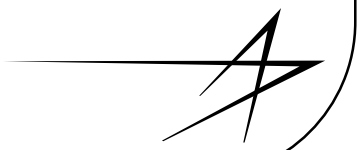


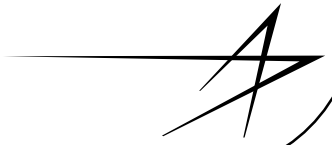
WHAT IS ISO 9000?

- **ISO 9000 is a series of international standards for the establishment of generic quality systems. A quality system is the organizational structure, responsibilities, procedures, processes, and resources for implementing quality management.**
- **It is <u>not</u> a product standard; it builds confidence in the product by reinforcing manufacturer credibility.**
- **Our quality system is modeled on ISO 9001.**
- **An ISO registration is a sustaining effort, not a one-time effort. We are re-audited every 6 months to maintain our registration.**



BENEFITS OF THE QUALITY MANAGEMENT SYSTEM

- **It allows us to establish a baseline quality system that we can maintain and improve.**
- **It establishes us as an ISO-registered business (good commercially and good because it meets a contractual requirement).**
- **It establishes a business management system that allows us to design and build flight hardware and software according to the same procedures every time (consistency).**
- **It provides a consistent system that is easier to trend and troubleshoot.**
- **It allows us to see existing problems in our present system and take steps to correct these problems.**
- **It promotes cross-departmental communications.**

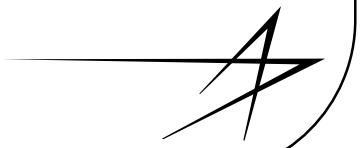


IMPLEMENTATION AND SUSTAINING THE SEAT QUALITY SYSTEM

- **Initial registration was achieved in December 1994 and lasts for 3 years, but may be revoked if major deficiencies are discovered.**
- **Internal and external audits occur continually on the quality system.**
- **Our ISO registrar [Det Norske Veritas (DNV)] will be performing audits every 6 months.**
- **Internal audits will be performed to ensure we are complying with our policy, procedures, and instructions.**
- **NASA may conduct ISO compliance audits on our quality system.**
- **Recertification and scope expansion were achieved August 1997.**

SEAT QUALITY SYSTEM SCOPE

- **The SEAT quality system is a contractually required system that applies to the design, development, manufacture, and assembly of flight hardware, ground support equipment, and associated software in the SEAT facilities. Because of recent contract consolidations, a scope expansion was necessary, and was conducted as follows:**
  - **Initial – Heritage ETAP projects (SEAT Schedule A)**
  - **January 1997 – Heritage EVAS projects (IPT 1 and IPT 3)**
  - **July 1997 – Software engineering**
  - **July 1997 – Heritage SPDEO (SEAT Schedule B) and Forge River facility**
- **Recertification and scope expansion were achieved in August 1997.**



AFFECTED ORGANIZATIONS

Procurement, Logistics, and Contract Administration

LMSMSS Materials Department

Fabrication

HDID

Safety and Product Assurance

S&PA

Operations Analysis

IS/PC

Hardware Engineering

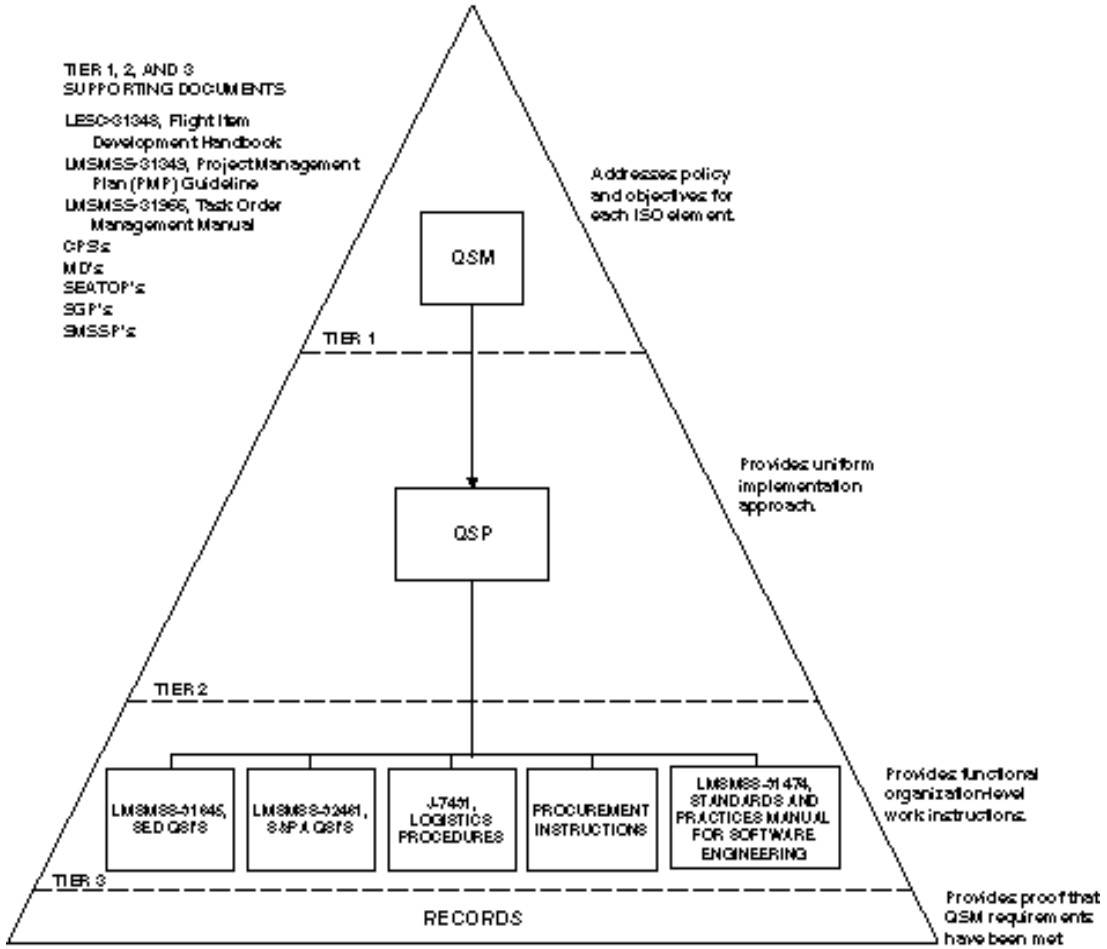
HDID, SPD, EVAS, EASD, HRF, Project Payload Systems Management, Biomedical, Engineering Support, Neurolab, NASA-Mir

Software Engineering

CSSD, HRF

Most functions and departments within SEAT are affected by our quality system. Senior and line management, the Quality Management Representative (QMR), contracts personnel, task order managers, project managers and engineers, and all project personnel are responsible parties.

SEAT QUALITY SYSTEM DOCUMENTATION



REQUIREMENTS FLOWDOWN

ISO standard element title	ISO	QSM	QSP	SED QSI	S&PA QSI	Logistics QSI	Gold+ QSI	Other
Management Responsibility	4.1	1			1.2			
Quality System	4.2	1		1-1, 1-2				
Contract Review	4.3	2	2	2-1	2.1			LMSMSS-31966
Design Control	4.4	3	3	3-1 – 3-5	3.1, 3.2			LMSMSS-31474
Document and Data Control	4.5	4	4	4-1	4.1, 4.2, 4.3, 4.4			
Purchasing	4.6	5	5	5-1	5.1, 5.2, 5.3			Procurement Instructions
Control of Customer-Supplied Product	4.7	6	6	6-1		1, 3, 4, 6, 6.1	1.1 – 5.2	
Product Identification and Tracking	4.8	7	7	7-1	7.1, 7.2, 7.3	1, 3, 6, 6.1		
Process Control	4.9	8	8	8-1 – 8.4				
Inspection and Testing	4.10	9	9	9-1	9.1, 9.2, 9.4, 9.6, 9.7	1, 6, 6.1		
Control of Inspection, Measuring, and Test Equipment	4.11	10	10		10.1			
Inspection and Test Status	4.12	11	11		11.1, 11.2, 11.3			
Control of Nonconforming Product	4.13	12	12		12.1, 12.2, 12.3, 12.5			
Corrective and Preventive Action	4.14	13	13	13-1	13.1, 13.2, 13.3			
Handling, Storage, Preservation, Packaging, and Delivery	4.15	14	14	14-1, 14-2	14.1	1, 3, 5, 6, 6.1, 9, 10	6.1 – 10.1	
Control of Quality Records	4.16	15	15	15-1	15.1, 15.2			
Internal Quality Audits	4.17	16	16	16-1	16.1			
Training	4.18	17	17	17-1	17.1			
Servicing	4.19	18						
Statistical Techniques	4.20	19						

TIER 1 DOCUMENTATION: QUALITY SYSTEM MANUAL (QSM)

- **States policy and objectives.**
- **Gives an overview of the organizational structure.**
- **Defines overall responsibilities and limits of authority.**

It presents the overall scope and intent of our quality system.

TIER 2 DOCUMENTATION: QUALITY SYSTEM PROCEDURES (QSP'S)

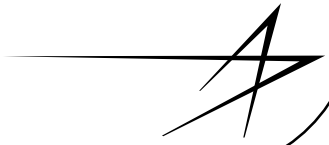
- **Align what we are doing with the elements in the QSM.**
- **Incorporate all applicable contract requirements and management policies.**
- **Define how the policy will be put into practice.**
- **Identify who is responsible and the associated task descriptions.**

TIER 3 DOCUMENTATION: QUALITY SYSTEM INSTRUCTIONS (QSI'S):

- **Provide documented work instructions for consistent application of processes.**
- **Are required when the absence of instructions could adversely affect the quality of the product.**

TIER 4 DOCUMENTS AND RECORDS: DEPARTMENT/PROJECT DOCUMENTATION MASTER LISTS

- **List all applicable documents and data required by the project(s), including SEAT quality system documents, documents of external origin, and project deliverables.**
- **Keep lists updated to ensure correct versions of requirements and quality system documents are being used.**
- **Include forms, records, and data as evidence that requirements have been met and the system is conforming.**
  - **QSP 15, Quality Records Control Matrix, identifies required items and official custodians.**
- **Establish project files to maintain quality records and project deliverables as "objective evidence."**



EMPLOYEE RESPONSIBILITIES

- **Know and understand the SEAT quality policy (have a copy at hand).**
- **Know what areas and functions are governed by our quality system.**
- **Know when you are working within our quality system. If affected:**
  - **Know which QSM, QSP's, and QSI's apply for your area and function and where the most recent copy can be obtained.**
  - **Perform <u>all</u> tasks per these procedures and instructions.**
- **Cooperate with both internal and external audits that assess how the quality system is working.**
- **Help implement audit recommendations related to QSI's. Bring any beneficial changes to our quality system to the attention of your supervisor, your manager, or the QMR.**

SEAT QUALITY POLICY

We will provide products and services that meet or exceed the quality expectations of our customers.

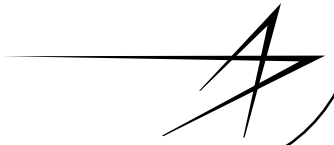
In implementing this policy, we will:

1. Focus on the customer and work as a contractor team member.
2. Involve all employees and subcontractors.
3. Establish high quality standards for our products and services.
4. Measure our quality results.
5. Recognize the quality achievements of our employees and subcontractors.

To implement this policy we employ:

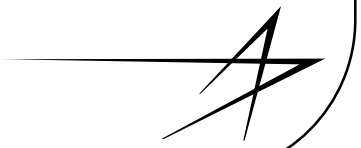
1. An organization that supports and fosters these principles through specific customer interfaces.
2. Organizational objectives to convey commitment, measure progress, and reward achievement.
3. Proactive methods and the tools to measure customer satisfaction, emphasize problem prevention, eliminate non-value added activities.
4. Training to assure all employees and subcontractors understand these principles and the tools and techniques that are available to assist them.
5. Simple procedures for the deployment of management responsibilities.

K. S. Reightler, Jr.
SEAT Program Manager



SPECIFICS REGARDING OUR QUALITY SYSTEM

- **Specific quality record keeping requirements exist – reference QSP 15, Quality Records Control Matrix.**
- **New functions are created – the QMR oversees the system. The Configuration Control Board (CCB) ensures that all changes in the QSM, QSP's, and peripheral documentation are approved prior to implementation.**
- **A specific quality policy has been developed and agreed upon, and all employees need to be familiar with it.**
- **Configuration management of QSI's is maintained by department representatives.**



SPECIFICS REGARDING OUR QUALITY SYSTEM (Concluded)

- **Trending data (e.g., audits, DR's, MDR's) is evaluated for system improvement. Preventive and corrective actions, handling customer complaints, and conducting management reviews are also control mechanisms within the SEAT quality system.**
- **Design, development, and manufacturing of flight hardware and associated flight software in offsite facilities is accomplished using peripheral documents, such as the Flight Item Development (FID) Handbook, the Standards and Practices Manual for Software Engineering, and the Project Management Plan (PMP) Guideline.**
- **An emphasis is placed on contract review and the documented capture of requirements prior to starting work. Customer and supplier communications and agreements must be captured and documented.**
- **Our system must be updated as the ISO 9001 standard changes.**